

Original Paper

What's up! WhatsApp: An Additional Teaching-Learning Tool in Physiotherapy Education

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Abstract

Introduction: More recently, there is growing use of WhatsApp as a communication platform for teachers and their students. It seems that WhatsApp has advantages over other technological tools employed by the educational system. However, in the context of medical education this concept is still nascent. Hence, the purpose of this retrospective analysis is to explore the effects of WhatsApp use for Physiotherapy education as an adjunct to traditional teaching and to determine the opinions of the students towards this process.

Methods: A facilitator created a group for the students, separate for every class. A total of 250 students from I year to IV year Physiotherapy undergraduate program participated voluntarily. Activities undertaken were discussion on academic topics, feedback on exam performance, guidance on seminar presentation, etc., and students' doubts were answered with more elaborate explanation on the topic. Retrospective analysis of the students' feedback obtained at the end of the program and content analysis was done from the themes identified.

Results:

Success of the program:

- Professional, as well as comfortable learning environment, is created on WhatsApp
- Low cost, simplicity, accessibility, efficiency & natural language
- Fosters high interactions with the facilitator and knowledge sharing between students as well
- Learning material—easy accessibility, variety of resources increases the flexibility, quick sharing of related links
- Use of different emotional gestures add humor and fun to TL
- Promotes proactive learning and critical thinking

- *Learning independently at anytime and anywhere (no geographical boundaries)*
- *Students are more open to ask questions as it provides privacy and confidentiality*
- *One student's doubt solving benefits the entire group*
- *Especially helpful during exam preparation for immediate feedback & quick problem solving, discussion of important topics, etc.*
- *Effective method for doubt solving, explanation with voice notes, video calls is possible*

Problems encountered:

- *Conceptual learning could be challenging*
- *Technical challenges: need for a smartphone & internet facility; message flooding, eye strain, time consuming if large amount of context has to be discussed*
- *High expectations on teacher's availability*
- *Students attention and understanding cannot be assured*
- *Effectiveness depends upon teacher's skills of use of related software applications*
- *Distractions from other messages received simultaneously*
- *Sometimes when the internet speed is slow, disruptions in the flow when many people are participating in the discussion*

Conclusion: *WhatsApp enables learning beyond classroom borders and can potentially enhance learning process in Physiotherapy education.*

Keywords

WhatsApp, physiotherapy, teaching-learning tool, social network

1. Introduction

The potential and influence of social networks on the educational environment are increasing rapidly every day, especially with the help of internet supported mobile technologies. This potential, which enables cooperative synchronous and asynchronous communication together with their multimedia support, and covers the features of social networks on a large scale, is gaining popularity. The growing technologies in education have made the concept of Mobile-learning ubiquitous in the present world (Bere, 2012). We all know WhatsApp (free to download, cross-platform mobile instant messaging) is the leading messaging application available easily on any smartphone device (Avci, 2015). WhatsApp is a tool used naturally by adults and students alike. Due to simplicity of this technological tool, more recently, there is growing use of WhatsApp as a communication platform for teachers and their students (Bouhnik & Deshen, 2014; Church & de Oliveira, 2013; Nguyen & Fusell, 2016). It seems that WhatsApp has advantages over other technological tools employed by the educational system (Bansal, 2014). The fact that these applications can have a great impact on the social development of young people necessitates the determination of their impact on students' academic development and

expectations. Despite the aforementioned academic incentives offered by these technologies (Doering, Lewis, Veletsianos, & Nichols-Besel, 2008; Cifuentes & Lents, 2010; Sweeny, 2010; Smit, 2012), limited research has been conducted to determine its usage in teaching-learning process. Especially, in the context of medical education this concept is still nascent. Hence, the purpose of this retrospective analysis is to explore the effects of WhatsApp use for Physiotherapy education as an adjunct to traditional teaching and to determine the opinions of the students towards this process.

2. Methodology

Context/setting: The participants were undergraduate Physiotherapy students from I year B. P.Th. to IV year B.P.Th. and interns at K. J. Somaiya College of Physiotherapy, Mumbai. Students' willingness to participate was taken into consideration. From the prior knowledge of the students, it was ensured that all the participants met with the technical pre-requirements (viz. possession of a smartphone, internet facility and the usage of WhatsApp, etc.) for participation in this activity. During the course of the study, these students were not using any other social media for teaching-learning. A total of 250 students (S) participated over a period of 5 years from the year 2013-2018.

Description of the innovation: Using the group chats feature the Facilitator (F) created a group for the students, separate for every class. Separate study groups were also created for academically weak students and for specific seminar presentations etc. Students were allowed to interact with the facilitator on personal chat also. All these activities were undertaken beyond the college hours.

Activities undertook: Technologically, almost all the core abilities and features of WhatsApp (viz. group chat feature; sending text, graphics, links; video calls etc.) were utilized to develop the educational strategies and to enhance the learning experience. Activities undertaken primarily included discussion on academic topics. The topics of discussions were decided by the facilitator or as demanded by the students (Fig. 1). The important aspects of any topic already taught in the classroom were emphasized again in the WhatsApp discussion. Sometimes students were introduced to a new topic on WhatsApp first before it is taught in the classroom (to stimulate their interest and help anticipate learning needs). Students' doubts were answered with more elaborate explanation on the topic. Most of the theoretical, practical and clinical topics were incorporated in WhatsApp teaching. Assignments were sent to the students. Feedback on exam performance was also given. Patients' photos, videos, investigation reports, etc., were shared and reflections from students were guided by the facilitator. Students themselves also shared their pictures of evaluation and treatment techniques; and received feedback from the facilitator as well as other students.

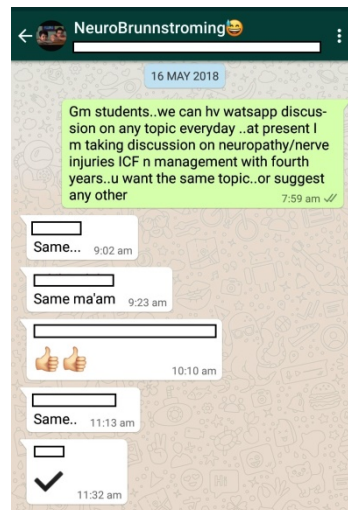


Figure 1. Topic of Academic Discussions Decided in Consensus with Students

3. Results and Discussion

Lesson learned

Qualitative approach was employed for analysis. Data was collected from the students' feedback and also from the facilitator's experience. Open ended question with regards to the benefits and disadvantages of WhatsApp use for teaching-learning was asked to the students at the end of their academic year. Following themes were identified after collation of the content received. This is reiterated as the Student's (S) or Facilitator's (F) comments.

Success of the program:

Although the general principles of teaching remain the same as for conventional teaching, there are some additional advantages due to which WhatsApp can be considered as effective.

Communication:

A professional as well as comfortable learning environment is created on WhatsApp. At its most basic level, education is nothing but communication. It is widely accepted that, as a communication tool, WhatsApp fosters high interactions with the facilitator and knowledge sharing between the students as well (Bere, 2012; Church, K., & de Oliveira, R., 2013). It promotes 3-way communications, i.e., Teacher <> Students <> Students. It creates sense of belonging and more collaborative learning is facilitated (Fig. 2). It promotes elements of arguments and discussion positively and eliminates social barriers. In today's world of competency-driven education system, WhatsApp communication amongst students provides them with a sense of competency and accountability. Teacher is able to praise the students. One student's doubt solving benefits the entire group. Also, it facilitates real time communication. It was observed that discussion on WhatsApp groups occurred more frequently and often with sharing of resources. Also, WhatsApp has the technical feature of end to end encryption and

ability to communicate on personal chat; so students feel more secure to interact.

S 45: “...We feel more open to ask questions on the group as well as on personal chat as it provides privacy and confidentiality”.

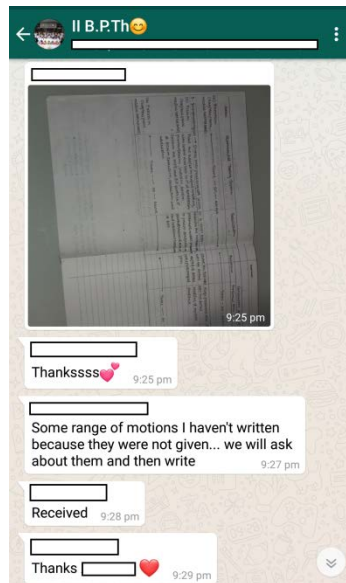


Figure 2. Collaborative Learning

Learning material: More resources, more access to resources

Ability to share unlimited text in various formats viz. word, PDF, PPT, etc. along with multimedia messages is an additional advantage of WhatsApp as compared to other social media (Fig. 3). Variety of resources increases the flexibility of teaching-learning method. Easy, quick and seamless amount of data accessibility increases the abundance of learning opportunities. More elaborate explanation with voice notes, video calls is also possible thus making it an effective method for doubt solving.

With effective use of E resources and quick sharing of related links, relevant images, interactive clinical cases, simulations, etc., more integrated teaching is possible and it also makes the learning more evidence based (Fig. 4). The facilitator is able to direct the students to more reliable and credible resources. As previously reported in a study, by getting the opportunity to explore the topic in depth; students' confidence with the study material also improves (Dar et al., 2017). Use of different emotional gestures adds humor and fun to teaching-learning (Fig. 5).

S11: “...Learning becomes more digital, more interactive and more discoverable with WhatsApp”.

F: “...It is not challenging to teach however it is interesting to be creative”.

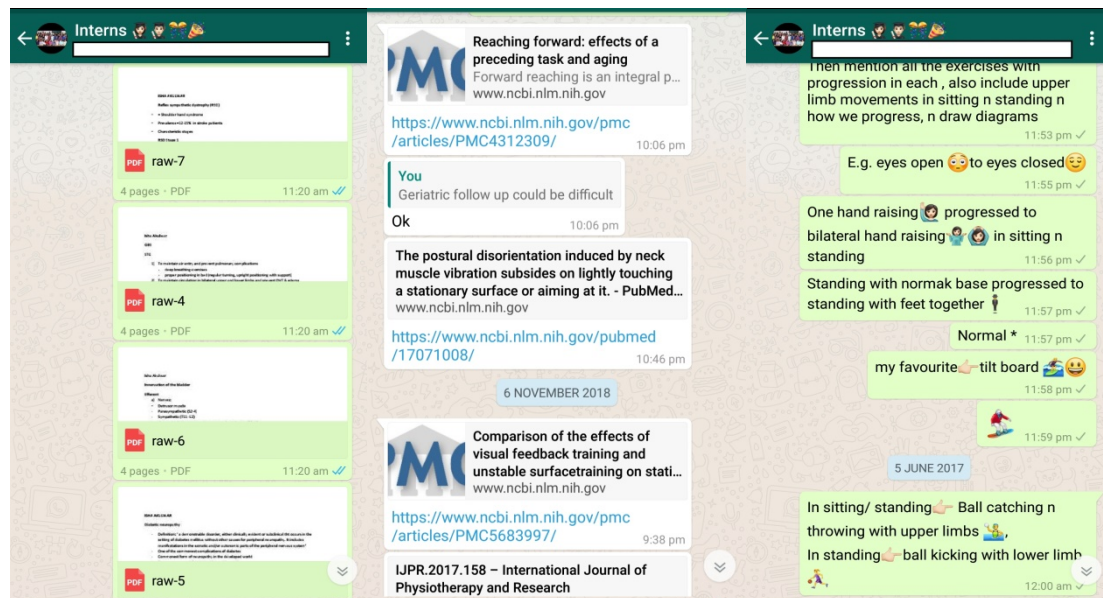


Figure 3 & 4. Variety in Format of Learning Material

Figure 5. Adding Humor & Fun to Learning

Student-centered and student-driven learning: As WhatsApp teaching is a tool which promotes student centeredness in teaching, it enhances student directed learning and thus life-long learning. It increases students' motivation to be an active learner (also reported by Mohanakrishnan K. et al., 2017; Dar, et al., 2017) and promotes proactive learning, critical thinking and deep student learning capabilities (also reported by Plana et al., 2013; Lohitashwa R. et al., 2015). More reflections are possible. It develops self-confidence to throw ideas and thoughts. Also, it provides consistency and progressive learning.

Clinical learning: (Fig. 6, 7, & 8) All the effective methods of teaching viz. Problem Based Learning (PBL), case based learning etc., is possible on WhatsApp. PBL discussions created more interest as the students had freedom to discuss with their friends and by pushing educational content into learners' mobile devices, mere sneakers to the WhatsApp group are encouraged to participate actively by searching information through online or offline. Thus, it follows the inquiry orientated method that is central to PBL. In line with a previous study for third year medical students, communication and education within PBL groups can be facilitated by the use of WhatsApp instant messaging (Dyavarishetty, & Patil, 2017). Many of the times, learning for clinical cases is opportunistic depending on exposure of the students to cases during their clinical posting and also limited due to time constraint. However, sharing the findings of clinical cases on WhatsApp bridges this gap of actual exposure and learning; and hence improving and generating the learning opportunities, an advantage unique to smartphone environment. Previous studies have reported its successful implementation in clinical

teaching for Psoriasis (Flynn, 2015) and for medical students on clinical attachment (Dyavarishetty, & Patil, 2017). Also, some professional and ethical issues can be more openly discussed on WhatsApp.

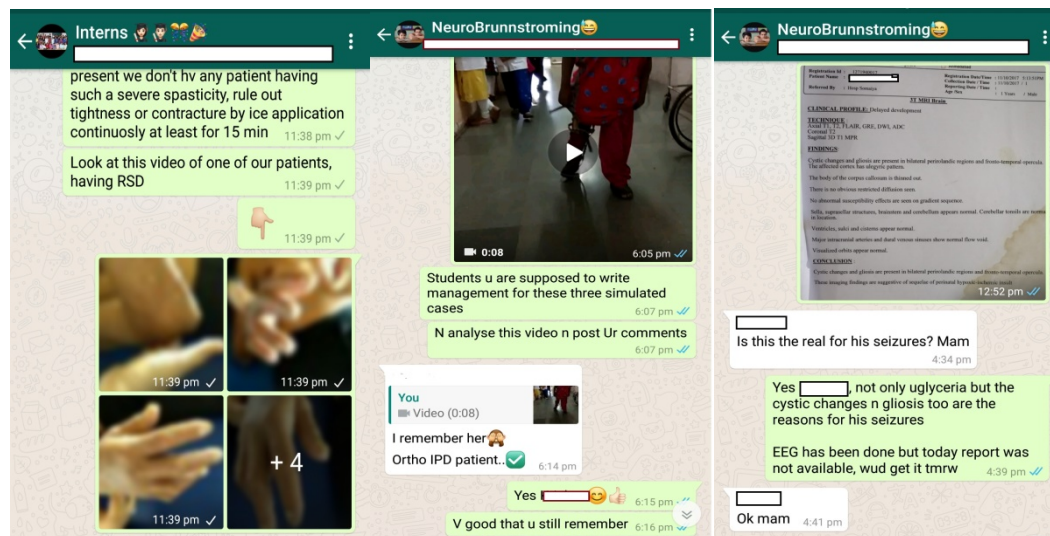


Figure 6, 7 & 8. Clinical Learning Methods Incorporated on WhatsApp

Quick learning: Just in time real information is provided. This is especially helpful during exam preparation for immediate feedback & quick problem solving, discussion of important topics, etc. (Fig. 9 & 10). In an interventional study for community medicine, students emphasized on its utility especially for exam preparation; by referring the model answer on their devices (Garrison, 2000). Special guidance can be given for seminar presentation, project etc. (Fig. 11). Learning on move; and similar other benefits have been reported by Bansal T., Joshi D. (2014) and Giordano, C. (2011).

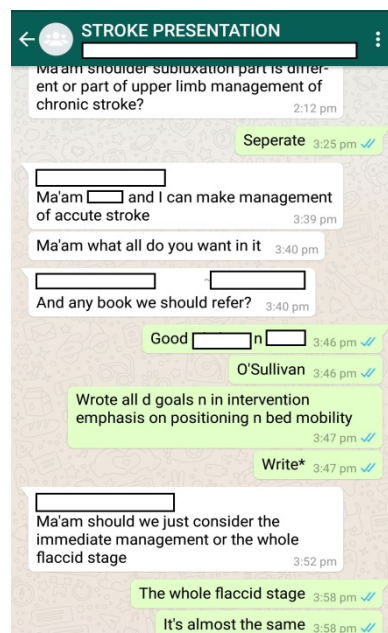
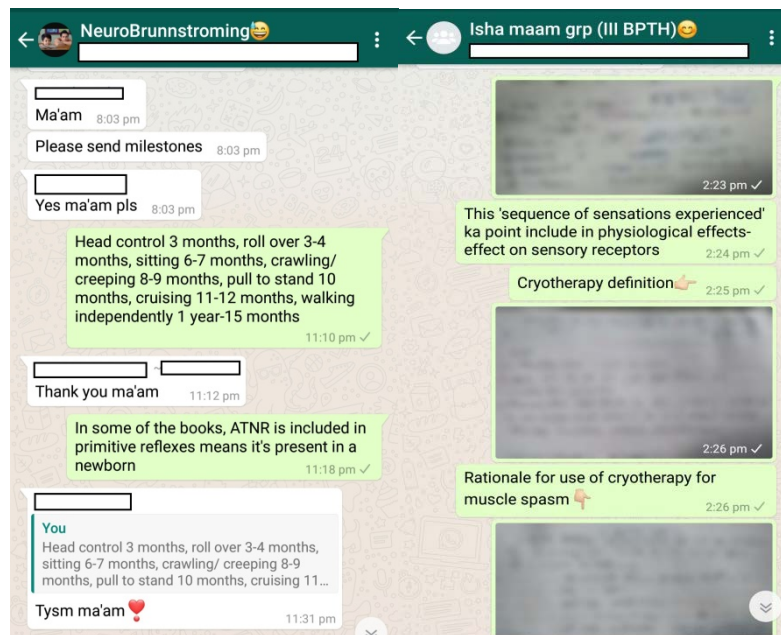


Figure 9, 10 & 11. Quick Learning

Teaching-learning becomes more flexible: Inadequacies of classroom teaching are well addressed in WhatsApp teaching. Also, two major blocks in traditional teaching-learning i.e. subject based system and time-based system are effectively overcome with WhatsApp method. Most important advantage of WhatsApp is learning independently at anytime and anywhere (no geographical boundaries) (Bere, 2012). Thus, teaching-learning becomes more flexible with respect to time, content and method. Social

media method is capable of creating Personal Learning Environments in which a student can adopt personal learning style and pace (Gon, S., & Rawekar, A., 2017). Most of the students appreciated the quality time they were getting with the teacher at online platform.

S 67: *"...I feel with WhatsApp teaching that time barrier isn't there anymore. Doubts come when we open the books at home and try to study and that's the time when the whole WhatsApp teaching comes handy. We ask you at the moment and get it solved perfectly..."* (Fig. 12).

Learning becomes more focused and practical too. Learning with WhatsApp brings more certainty, replication and precision in teaching-learning. Documentation of learning material, feedback and learning experience is possible.

Students reported the practicality of access to previous conversations and resources, being able to refer back to them and also being able to access this all the time.

S 176: *"...We can archive the notes from WhatsApp for exam preparation..."*

S12: *"...We can access the recorded discussions..."*

It addresses heterogeneity of students more positively catering to individual specific needs. Also, the technological features of WhatsApp enable teaching methods suitable for visual and auditory learners as well. In one of the studies (Indu, Kandhol, & Cherian, 2018), the groups of male and female learners were kept separate to meet their cultural requirements of segregation. This study found that male students ranked it better as compared to female students in contrast to findings of another study (Jain, Baghel, & Ranjan, 2017) which showed that WhatsApp learning was favored by female students.

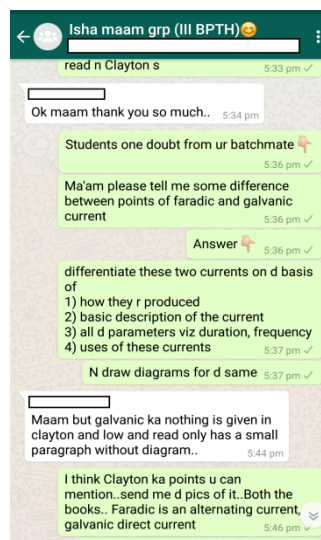


Figure 12. Doubt Solving

Social aspect of learning: (Fig. 13 & 14) Garrison et al. (2000) claimed that there are three intersecting elements essential to a successful online learning community: (1) social presence, (2) cognitive presence, and (3) teaching presence. It is important to mention that throughout the study period students remained actively engaged and there was “no drop out” by any of the participants since the study group was created. This implies that students find WhatsApp use meaningful, relevant to their academic growth and are socially bound together creating long-lasting relationship with the teacher. Our findings are in accordance with previous studies which reported that medical students perceived, social media in medical education, facilitates professional development (Lenhart, Madden, Macgill, & Smith, 2007). A previous analysis also showed that WhatsApp is a suitable platform for student groups to develop social presence in a PBL group, which is a key element for a successful learning experience (Lohitashwa et al., 2015). Similar study by Makoe (2010), whose research was similarly focused toward the use of mobile instant messaging for learning (using MXit MIM rather than WhatsApp), acknowledged its potential usefulness for developing the social aspect of learning.

S 18: “...WhatsApp teaching can be an easier, faster and a better way because now a days people like us are always on WhatsApp or on social media, so if something beneficial can happen through, then why not...”

Two established learning theories such as connectivism and constructivism support incorporating social media into education system. Connectivism explains how Internet has created opportunities for learning across online peer networks (Ludlow, & Duff, 2009; Mattar, 2018). According to constructivism, learning is a social process and students learn best through interactions (Mazzuoccolo et al., 2018). Using WhatsApp in teaching provides an opportunity to implement both these learning theories in an effective way (Mohanakrishnan et al., 2017) The established popularity of WhatsApp Messenger as a social communication tool aided its successful integration into teaching. The familiarity of the use of the application meant that no training had to be organized. Furthermore, there was no additional financial cost incurred by the use of WhatsApp Messenger, due to the fact that students and facilitator already had the application installed on their phones. To the best of our knowledge, this dedicated long term (more time and number of sessions) on a large cohort of the students is the only study conducted for higher education, also the first one reported in Physiotherapy undergraduate education. It is important to appreciate the comprehensive nature of the methodology and outcomes too reported in this study.



Figure 13 & 14. Social Aspect of Learning

Problems encountered:

High expectations on teacher's availability could be one of the biggest challenges perceived by the teacher. Operating such a group demands constant availability of teachers and requires teachers to invest time beyond their regular duty hours has been previously expressed by medical teachers as well (Bere, 2012). This challenge could be overcome with more teachers' involvement and restricting the time of posts.

One of the negative aspects of WhatsApp—is the lack of direct physical connectivity and face to face interaction—thus, **students' attention and understanding cannot be assured**. This concern of uncertainty of understanding (also reported by Raiman et al., 2017) and of variable learner participation and passivity of some of the learners has been reported previously by Indu M. et al. (2018) while teaching medical undergraduates. However, when such learners are identified; we recommend that more encouragement from the facilitator and personal chat feature should assure active participation from everyone.

Type of learning:

Practical topics can only be emphasized on WhatsApp, however needs to be previously/afterwards taught directly in the classroom.

S 18: "...It might be sometimes difficult to understand a practical topic on WhatsApp without actual practice..."

This view is also mentioned in a study⁴ that 6.25% of medical teachers feel psychomotor component of learning cannot be involved in WhatsApp method. As Physiotherapy is a hands on profession, practical teaching in the direct classroom environment is more important as patient handling skills cannot be

taught through WhatsApp.

Conceptual learning sometimes could be challenging.

S 45: "...There might be problems related to misinterpretation of information..."

Using WhatsApp in communicating with students cannot replace the traditional way of learning by attending classes, reading text books, etc. It can only supplement the learning process to be fun, faster and help students learn things easily.

S 88: "...When a teacher explains a student face to face, it develops a better student-teacher relationship and student's confidence..." Reduced personal interaction and no emotional contact were perceived as disadvantages also by medical teachers in a study on WhatsApp use as a teaching mode (Bere, 2012).

Technical challenges: need for a smartphone & internet facility; Teaching with WhatsApp could be time consuming if large amount of context has to be discussed. Eye strain (Fig. 15) could be one of the important hazards as we need to use a small screen and especially for a longer time (Robinson, 2015). Though it is technically simple, effectiveness depends upon teacher's skills of use of related software applications. Message flooding²¹ and distractions from other messages received simultaneously could disturb the attention of the learner/teacher. Sometimes when the internet speed is slow, disruptions could occur in the flow when many people are simultaneously participating in the discussion.



Figure 15. Eye Strain due to WhatsApp

Necessary precautions should be taken to minimize the drawbacks expressed by the students. These could include the following suggestions: To avoid disruption in the flow of discussion, use the feature of "tag the message" while replying. To avoid distractions from the other messages received simultaneously, the notification should be kept off.

Limitations: However, I acknowledge that this was not a structured program and the content and design of the program were not pre planned. More structured program could be better able to achieve the desired educational outcomes. Also, this was a qualitative analysis and especially from students' perspective. The effectiveness of such programs should be assessed more objectively with a quantitative approach. We recommend similar studies involving more educators.

Conclusion: WhatsApp enables learning beyond classroom borders and can potentially enhance learning process. To conclude from my own experience with WhatsApp teaching for last 4-5 years,

WhatsApp has an immense potential to impact learning from both theoretical and practical point of view and also in clinical teaching for Physiotherapy students. The technological, instructional and educational advantages far outweigh the disadvantages or the challenges encountered. Overall the low cost, simplicity, accessibility, efficiency & natural language of WhatsApp support its natural use in teaching-learning. WhatsApp can be used to reach students via the technology they are most familiar with. Students are favorably inclined to use the WhatsApp and welcome its role in enhancing their learning experience. This additional tool given in teachers' hands creates another venue for learning. The teacher as a facilitator is equipped with simple but extremely dynamic tool in teaching-learning.

Implications: The internet has had a more dramatic influence on education than any previous technological innovation (Robinson, 2015). A recent survey on first year and graduating students revealed that students prefer online media as their primary source of information (Sthapornnanon, 2009). In the phase of transition introduction of M-learning could be an important milestone landmark keeping pace with the need of this fast growing generation. This technological advancement, if supported with a change in our educational strategy can result in a major paradigm shift in teaching-learning. I recommend that the use of WhatsApp in Physiotherapy education process should be encouraged as a supportive technology (Fig. 16 & 17). I wish to further expand this activity by preparing a structured content and design and by taking learners' feedbacks regularly and in a more structured way. Also, use of WhatsApp for the evaluation purpose needs to be explored.



Figure 16 & 17. WhatsApp: Innovate to Teach.. Participate to Learn

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Conflict of interest

The author declares that there is no conflict of interest.

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